

a bottom surface; and

a via extending through the circuit board from the top surface to the bottom surface, wherein the via is electrically connected to the top pad, and wherein the via includes an opening at the bottom surface; and

(b) forming a plug in the via by inserting a volume of material into the via through the opening in the via.

2. The method of claim 1, wherein the printed circuit board comprises a middle layer between the top surface and the bottom surface, wherein the middle layer comprises an electrical circuit pattern, and wherein the via is electrically connected to the electrical circuit pattern.

3. The method of claim 1, wherein the via is plugged by a process comprising the steps of:
screening solder paste into the opening in the via to form a solder mass within the via; and
reflowing the solder mass, wherein the solder mass is redistributed within the via so as to form the plug.

4. The method of claim 1, wherein the via is plugged by a process during which a bottom component is installed onto the bottom surface, comprising the steps of:

screening solder paste, wherein the screening inserts solder paste into the opening in the via to form a solder mass within the via and onto a bottom pad located on the bottom surface to form a solder layer;

placing the bottom component on the bottom surface, wherein the bottom component is in

mechanical and electrical contact with the solder layer; and

reflowing the solder mass and the solder layer, wherein the solder mass is redistributed within the via so as to form the plug, and wherein the bottom component is mechanically and electrically affixed to the bottom surface.

5. The method of claim 1, further comprising the steps of:

installing the top component on the top surface, wherein a contact element of the top component is mechanically and electrically affixed to the top pad;

placing a second component on the printed circuit board; and

wave soldering the bottom surface, wherein the second component is mechanically and electrically affixed to the printed circuit board.

6. The method of claim 1, wherein step (b) is preceded by the step of:

installing the top component on the top surface, wherein a contact element of the top component is mechanically and electrically affixed to the top pad;

and wherein step (b) is followed by the steps of:

placing a second component on the printed circuit board; and

wave soldering the bottom surface, wherein the second component is mechanically and electrically affixed to the printed circuit board.

7. The method of claim 5, wherein the top component is a ball grid array module, and wherein the contact element is a solder ball.

8. The method of claim 5, wherein the top component is a surface mount device with a lead, wherein the contact element is the lead.

9. The method of claim 5, wherein the installation of the top component is accomplished by a process comprising the steps of:

screening solder paste onto the top pad to form a layer of solder;

placing the top component on the top surface, wherein the contact element is in mechanical and electrical contact with the top pad; and

reflowing the layer of solder, wherein the contact element is mechanically and electrically affixed to the top pad.

10. The method of claim 5, wherein the second component is a pin-in-hole component comprising a pin-component lead, wherein the pin-in-hole component is placed on the top surface, wherein the pin-component lead is directed from the top surface into a pin hole, and wherein the pin hole extends from the top surface to the bottom surface.

11. The method of claim 5, wherein the second component is a bottomside component, wherein the bottomside component is mounted on the bottom surface, and wherein the bottomside component is in mechanical and electrical contact with the bottom surface.

12. A method for constructing a printed circuit board assembly, comprising the steps of:

(a) providing a printed circuit board comprising:

a top surface comprising a top pad, wherein the top pad is electrically connectable to a top component;

a bottom surface;

a middle layer between the top surface and the bottom surface comprising an electrical circuit pattern; and

a via extending through the circuit board from the top surface to the bottom surface, wherein the via is electrically connected to the top pad, wherein the via is electrically connected to the electrical circuit pattern, and wherein the via includes an opening at the bottom surface; and

- (b) plugging the via while installing a bottom component onto the bottom surface, by a process comprising the steps of:

screening solder paste, wherein the screening inserts solder paste into the opening in the via to form a solder mass within the via and onto a bottom pad located on the bottom surface to form a solder layer;

placing the bottom component on the bottom surface, wherein the bottom component is in mechanical and electrical contact with the solder layer; and

reflowing the solder mass and the solder layer, wherein the solder mass is redistributed within the via so as to form the plug, and wherein the bottom component is mechanically and electrically affixed to the bottom surface; and

- (c) installing the top component on the top surface, wherein a contact element of the top component is mechanically and electrically affixed to the top pad.

13. The method of claim 12, wherein the installation of the top component in step (c) is accomplished by a process comprising the steps of:

screening solder paste onto the top pad to form a layer of solder;
placing the top component on the top surface, wherein the contact element is in mechanical and electrical contact with the top pad; and
reflowing the layer of solder, wherein the contact element is mechanically and electrically affixed to the top pad.

14. The method of claim 13, wherein the top component is a ball grid array module, and wherein the contact element is a solder ball.

15. The method of claim 13, further comprising the steps of:

- (d) placing a pin-in-hole component on the top surface, wherein the pin-in-hole component comprises a pin-component lead, wherein the pin-component lead is directed from the top surface into a pin hole, and wherein the pin hole extends from the top surface to the bottom surface; and
- (e) wave soldering the bottom surface, wherein the pin-in-hole component is mechanically and electrically affixed to the printed circuit board, and wherein a mask is used to shield the bottom component from the effect of wave soldering.

16. The method of claim 13, further comprising the steps of:

- (d) placing a pin-in-hole component on the top surface, wherein the pin-in-hole